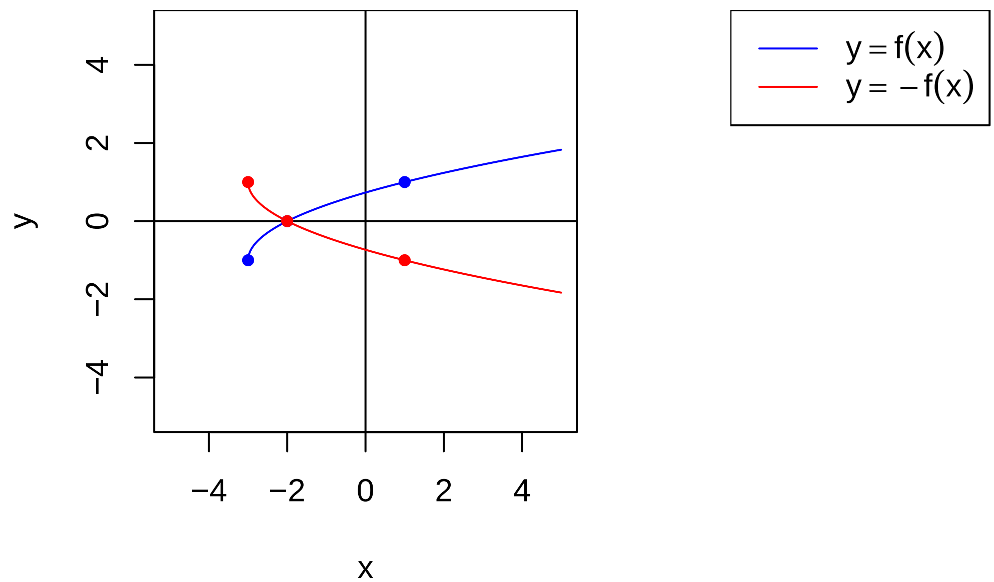
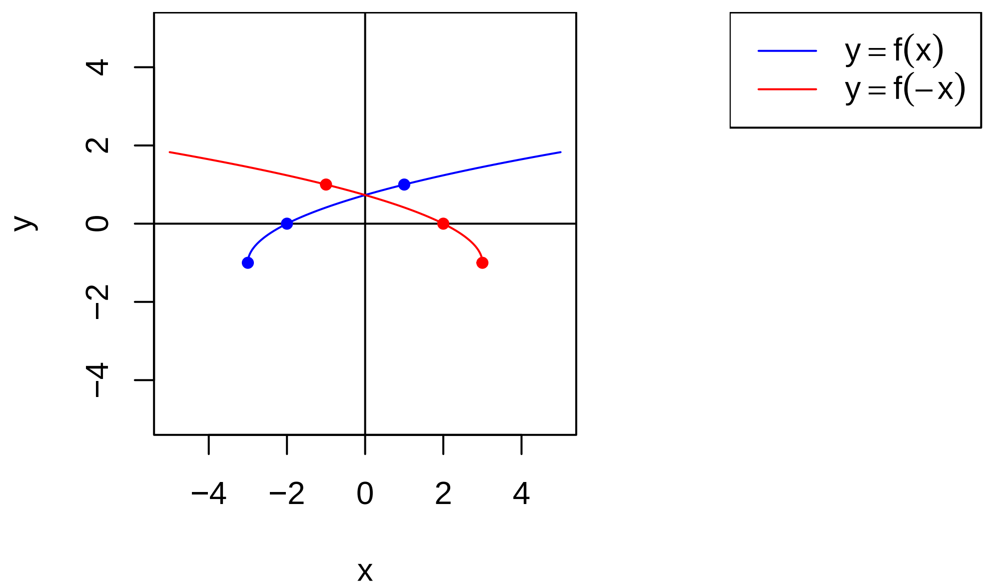
Vertical reflection: $y = -f(x)$

- Vertical reflection (reflection over the x axis)
- Let corresponding points (x_1, y_1) and (x_2, y_2) exist such that $y_1 = f(x_1)$ if and only if $y_2 = -f(x_2)$.
  - Then we know $x_2 = x_1$ and $y_2 = -y_1$. (Negate the y values.)
  - In other words: $(a, b) \to (a, -b)$ for any point (a, b) on curve $y = f(x)$.
  - For example, $(3, 1)$ is on $y = f(x)$ if and only if $(3, -1)$ is on $y = -f(x)$



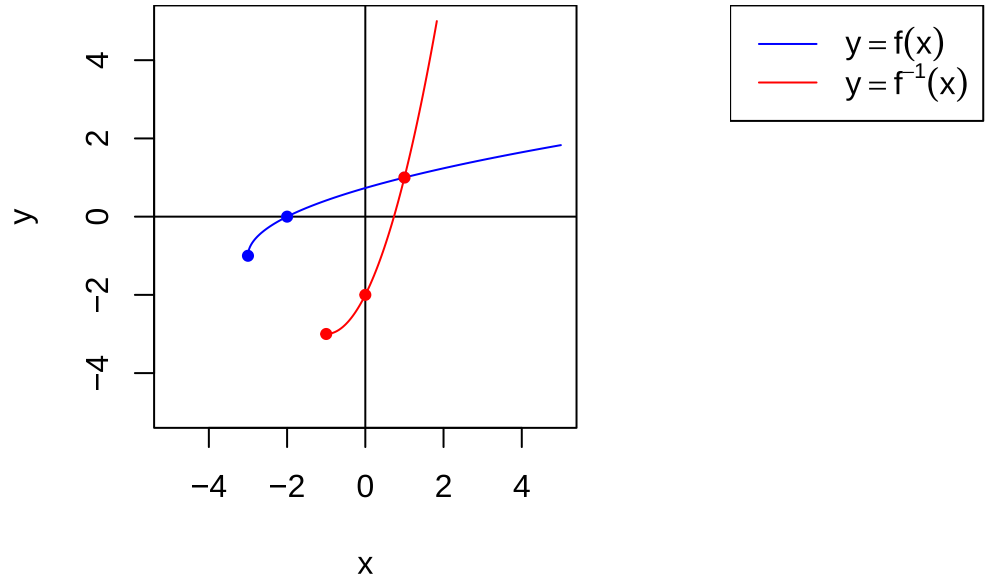
Horizontal reflection: $y = f(-x)$

- Horizontal reflection (reflection over the y axis)
- Let corresponding points (x_1, y_1) and (x_2, y_2) exist such that $y_1 = f(x_1)$ if and only if $y_2 = f(-x_2)$.
  - Then we know $x_2 = -x_1$ and $y_2 = y_1$. (Negate the x values.)
  - In other words: $(a, b) \to (-a, b)$ for any point (a, b) on curve $y = f(x)$.
  - For example, $(3, 1)$ is on $y = f(x)$ if and only if $(-3, 1)$ is on $y = f(-x)$



Inverse function: $y = f^{-1}(x)$

- Reflection over the $y = x$ line.
- Let f represent a one-to-one function.
- Let corresponding points (x_1, y_1) and (x_2, y_2) exist such that $y_1 = f(x_1)$ if and only if $y_2 = f^{-1}(x_2)$.
  - Then we know $x_2 = y_1$ and $y_2 = x_1$. (Swap the x and y.)
  - In other words: $(a, b) \to (b, a)$ for any point (a, b) on curve $y = f(x)$.
  - For example, $(3, 1)$ is on $y = f(x)$ if and only if $(1, 3)$ is on $y = f^{-1}(x)$



Double reflection: $y = -f(-x)$

- Double reflection over x axis and then y axis (or 180° rotation around origin).
- Let corresponding points (x_1, y_1) and (x_2, y_2) exist such that $y_1 = f(x_1)$ if and only if $y_2 = -f(-x_2)$.
  - Then we know $x_2 = -x_1$ and $y_2 = -y_1$. (Negate the x and y values.)
  - In other words: $(a, b) \to (-a, -b)$ for any point (a, b) on curve $y = f(x)$.
  - For example, $(3, 1)$ is on $y = f(x)$ if and only if $(-3, -1)$ is on $y = -f(-x)$